

Interjurisdictional Responses to Aquatic Nuisance Species in the Pacific Northwest

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Abstract

Authorized by Congress in 1947, the Pacific States Marine Fisheries Commission (PSMFC) is one of three interstate commissions dedicated to resolving fishery issues. Representing California, Oregon, Washington, Idaho, and Alaska, the PSMFC does not have regulatory or management authority; rather it serves as a forum for discussion, and works for coastwide consensus to state and federal authorities.

The objective of our ANS prevention/education program is to prevent harm from ANS species to important commercial and recreational fisheries and the ecosystems upon which these fish depend.

Currently, the program funds are directed at four species: zebra mussels, Atlantic salmon, green crab and mitten crab. Program emphasis is on outreach and education to appropriate user groups. Zebra mussel (*Dreissena polymorpha*) prevention has focused on educational outreach to boaters, monitoring for zebra mussel presence, and the establishment of a zebra mussel hotline in the western United States.

Program funds are also being used to determine abundance and distribution of European green crab (*Carcinus maenas*), Atlantic salmon (*Salmo salar*) and Chinese mitten crab (*Eriocheir sinensis*) in selected West Coast locations. Research at Portland State University is focused on developing a model that will provide a basis to predict the potential range and population size for Chinese mitten crabs in these specific estuaries.

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The fishing industry is an important contributor to the west coast economy. The landed value of the west coast commercial fishing industry (Oregon, Washington, California) for all species including crab, shrimp, salmon, whiting, and groundfish, for 2002 was approximately \$165 million (Tyler 2003). In 2000, marine recreational anglers in Oregon, Washington and California spent between \$574 million and \$2.5 billion (Gentner *et al.* 2001). Therefore, the PSMFC is particularly concerned about those Aquatic Nuisance Species (ANS) that threaten economically important fish stocks and the habitats upon which these stocks depend.

The PSMFC works in close cooperation with the Center for Lakes and Reservoirs (CLR) at Portland State University (PSU). The CLR was established by the Oregon legislature to address lake management and invasive aquatic species issues in Oregon. The CLR is in the Environmental Sciences and Resources Department at PSU, which has a major focus on watershed and aquatic ecosystem management, but has affiliated faculty from several PSU departments. Dr. Mark Sytsma is the center's director, and oversees implementation of the Oregon Aquatic Nuisance Species Management Plan, as well as numerous other grant and contract-funded invasive species projects.

In the past 4 years, the PSMFC's ANS program has concentrated on four species of aquatic invaders: mitten crab (*Eriocheir sinensis*), the European green crab (*Carcinus maenas*), the zebra mussel (*Dreissena polymorpha*), and the Atlantic salmon (*Salmo salar*). PSMFC's program activities include research and monitoring, educational outreach, inter-jurisdictional planning and coordination, and providing funding and contracting services for our numerous partners. Our program is funded by the Bonneville Power Administration (BPA), US Fish and Wildlife Service (as part of the 100th Meridian Initiative), and NOAA Fisheries.

The program has focused on two principle vectors of transmission: marine ballast water exchanges and recreational watercraft (freshwater). Recreational watercraft are most likely the primary mechanism by which zebra mussels will be spread west of the 100th Meridian and into the Columbia River Basin (CRB) and elsewhere. We believe that the most cost-effective strategy in preventing the spread of zebra mussels and other ANS will be through educational outreach.

Zebra Mussel Educational Outreach and Monitoring

Lewis and Clark Bicentennial

Zebra mussels pose a serious economic and ecological threat to the Columbia River Basin's multiple uses such as agricultural, navigation, boating, fishing, industrial, and hydroelectric operations. In 1999 the Bonneville Power Administration (BPA), recognizing the potential impact to its operations from zebra mussels, contracted with the PSMFC to undertake an aquatic nuisance species prevention program in the CRB. With billions of dollars in annual revenue, BPA has reason to be alarmed at the potential impacts of zebra mussels. Managers of water projects not only in the Columbia River Basin, but also in the Colorado River Basin and California's Central Valley, would face serious threats and extremely costly maintenance expenses (hundreds of millions? Billions?) from zebra mussels such as clogged pipes, reduced water-carrying efficiency, damage to components, fouling, and water quality problems resulting from a zebra mussel infestation. In addition, zebra mussels would compromise federally threatened and endangered salmon and steelhead of which the federal government has a legal responsibility to protect.

The year 2003 marks the beginning of the Bicentennial of the Lewis and Clark expedition. It is expected that thousands of large and small boats, canoes, and other watercraft will be paddled, motored, and trailered along Lewis and Clark's route through the Missouri, Clearwater, and Columbia Basins in commemoration of the expedition. The anticipated mass movement of watercraft from the Midwest to west of the 100th Meridian represents a significant vector for potential movement of zebra mussels and other ANS (*i.e.* the New Zealand mudsnail, *Potamopyrgus antipodarum*).

Unfortunately, public awareness of ANS is lacking. We see the Bicentennial as an opportunity to educate boaters and others about the benefits of ensuring that aquatic nuisance species are not transported across country.

The goal of Bicentennial ANS prevention is to expose those boaters most likely to participate in Bicentennial activities to information on boating equipment inspection and cleaning as a means of preventing the spread of ANS. This information is being made available to boaters in a variety of ways from the time they begin planning a trip to the Missouri River all the way to the boat launch.

Some of the key elements of the program include:

- Providing timely and regularly updated ANS prevention information targeted at Bicentennial boaters on the national level through print and electronic media.
- **Traveler Information Stations (TIS):** Low-frequency radio stations (TIS) are being installed in Montana along the Lewis and Clark route with funding from the BPA and the USFWS (Region's VI and I). We are planning, with our state and federal partners, to add additional stations at major highways used by boaters to access the Missouri River from the east. Radio messages will advise boaters to clean all boating equipment when coming from zebra mussel states and provide them with the location of the nearest boat cleaning station.
- **Partnerships:** We are establishing a public-private partnership between water resource management agencies and Missouri River marinas, river-based concessionaires, and portage operators to prevent the unintentional introduction of zebra mussels and other ANS. This partnership is based on the common interest in maintaining healthy plant and animal communities within the Missouri River and its impoundments.
- **100th Meridian Initiative Coordination.** The goals of this USFWS facilitated initiative are to: (a) prevent the spread of zebra mussels and other aquatic nuisance species in the 100th meridian jurisdictions and west, and (b) monitor and control zebra mussels and other aquatic nuisance species if detected in these areas. The initiative has proved to be an effective nexus in ANS coordination in the western United States. An *ad hoc* ANS working group of Missouri Valley state and federal natural resource agencies, dedicated to Lewis and Clark ANS prevention strategies, has its origins in the 100th Meridian Initiative. For further information on the initiative go to <http://100thmeridian.org/>.

- **Crime Witness Hotline:** The Crime Witness Program is a toll-free crime informant hotline that allows citizens to report any illegal activity witnessed against BPA, Bureau of Reclamation and US Army Corp of Engineers property. It is housed and staffed by BPA at its Portland office. The program covers the 17 Western states. In 2002, PSMFC worked with the BPA to expand the Crime Witness Hotline's capacity so that potential zebra mussel sightings can be reported in the 17 states straddling or west of the 100th Meridian. To assist in reporting the sightings, the PSMFC developed a state and federal contact list for the western United States. When the hotline is called (1-800-437-2744) on a potential zebra mussel sighting, the operator passes the information on to the appropriate state and federal agency aquatic nuisance species contacts for follow-up.
- **Boat Ramp Signs:** A total of 500 signs will be purchased and erected along the Missouri River (with funding from the US Fish and Wildlife Service). These signs will include the steps that boaters can take to reduce the threat of spreading zebra mussels and other ANS (*i.e.*, drain, dispose, rinse and dry).
- **Zebra Mussel Monitoring:** Early detection of invasions is critical to effective management. Surveillance of multiple sites over such a large geographical area is often cost-prohibitive using paid staff. Volunteer monitoring allows wide geographical coverage at minimal cost and has the added secondary benefit of contributing to an educational effort. Substrates are six-inch sections of two-inch wide PVC pipe that volunteers attach by a rope to a dock or other structure. The pipe sections are drilled with 3/8-inch holes to enhance water movement through the substrate, and are filled with approximately 16-inch x 8-inch strips of plastic mesh ("bridal veil"). Approximately 200 substrates have been deployed in Montana, North Dakota, Utah, Arizona, Wyoming, Washington, Idaho, and Oregon. We intend to expand the coverage of the program in 2003 to include Missouri River reservoirs and other locations.

Literature Cited

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